What is claimed is:

1. A single-inductor dual-output buck converter comprising:

a power source;

a first output that selectively obtains power from the power source through an inductor; and

a second output that selectively obtains power from the first output through the inductor.

2. The converter of claim 1, further comprising a first switch that controllably provides power from the power source to the first output.

3. The converter of claim 2, further comprising a second switch that controllably provides the power from the first output to the second output.

4. The converter of claim 1, wherein the first output further comprises a first capacitor and a first load, wherein the first capacitor stores a charge and is in parallel to the first load.

5. The converter of claim 4, wherein the second output further comprises a second capacitor and a second load, wherein the second capacitor stores a charge and is in parallel to the second load further.

6. The converter of claim 1, further comprising a third switch connected to the inductor that selectively causes inductor current to decrease to zero.

7. The converter of claim 1, wherein the power supply produces a voltage of about 3 V, the first output produces a voltage of about 1.8 V, and the second output produces a voltage of about 1.2 V.

8. The converter of claim 7, wherein the first output and the second output supply a total current of about 150 mA.

9. A single-inductor dual-output buck converter comprising:

a power source having a positive terminal and a negative terminal, wherein the negative terminal is connected to ground;

a first switch having a first terminal and a second terminal, wherein the first terminal is connected to the positive terminal of the power source;

a second switch having a first terminal and a second terminal, wherein the first terminal is connected to the second terminal of the first switch;

a third switch having a first terminal and a second terminal, wherein the first terminal is connected to the first terminal of the second switch and wherein the second terminal is connected to ground;

an inductor having a first terminal and a second terminal, wherein the first terminal is connected to the first terminal of the second switch;

a first output connected to ground and the second terminal of the inductor; and

a second output connected to ground and the second terminal of the second switch.

10. The converter of claim 9, wherein the first output comprises a first load and a first capacitor, the first load having a positive terminal connected to the second terminal of the inductor and a negative terminal connected to ground, the first capacitor having a positive terminal connected to the second terminal of the inductor and a negative terminal connected to ground.

11. The converter of claim 10, wherein the second output comprises a second load and a second capacitor, the second load having a positive terminal

connected to the second terminal of the inductor and a negative terminal connected to ground, the second capacitor having a positive terminal connected to the second terminal of the inductor and a negative terminal connected to ground.

12. The converter of claim 11, wherein the first switch is turned ON and the second switch and the third switch are turned OFF during a first stage of operation that increases inductor current and supplies power to the first output, wherein the first switch and the second switch are turned OFF and the third switch is turned ON during a second stage of operation that decreases the inductor current, wherein the first switch, the second switch, and the third switch are turned OFF during a third stage of operation that maintains the inductor current at about zero and drops a voltage across the second output until the voltage drops below a first reference voltage, wherein the first switch and the third switch are turned OFF and the second switch is turned ON during a fourth stage of operation that changes a direction of the inductor current and supplies power to the second output from the first output until the voltage of the first output drops below a second reference voltage.

13. The converter of claim 11, wherein the first capacitor has a capacitance of 47 uF, the second capacitor has a capacitance of 10 uF, a switching frequency of the converter is about 200 Khz and a ramp amplitude of 20 mV, a first reference voltage is 500 mV, the first output provides a voltage of about 1.8, the second output provides a voltage of about 1.2, the inductor has an inductance of about 3 uH, and the power source supplies a voltage of about 3 V.

14. A method of operating a single-inductor dual-output buck converter comprising:

entering a first stage of operation upon a first output voltage of a first output dropping below a first reference voltage, wherein the first stage of operation includes increasing an inductor current from a negative value to a positive value to supply power to the first output;

entering a second stage of operation from the first stage, wherein the second stage of operation includes decreasing the inductor current supplied to the first output until the inductor current is about zero;

entering a third stage of operation from the second stage, wherein the third stage of operation includes maintaining the inductor current at about zero until a second output voltage of a second output drops below a second reference voltage; and

entering a fourth stage of operation from the third stage, wherein the fourth stage of operation includes decreasing the inductor current to a negative value to supply power to the second output from the first output.

15. The method of claim 14, wherein the first stage of operation further comprises turning a first switch ON that connects a power source to the inductor, wherein the inductor is connected to the first output.

16. The method of claim 14, wherein the second stage of operation further comprises turning a first switch OFF that connects a power source to the inductor and turning a third switch ON that connects the inductor to ground.

17. The method of claim 14, wherein the third stage of operation further comprises turning a third switch OFF that connects the inductor to ground.

18. The method of claim 14, wherein the fourth stage of operation further comprises turning a first switch OFF to isolate a power source to the inductor and the first output and turning a second switch ON to connect the second output to the inductor.

19. The method of claim 14, wherein the first stage of operation further comprises turning a first switch ON that connects a power source to the inductor, wherein the inductor is connected to the first output, wherein the second stage of operation further comprises turning the first switch OFF and turning a third switch ON that connects the inductor to ground, wherein the third stage of operation further comprises turning the third switch OFF, and wherein the fourth stage of operation further comprises turning the first switch OFF to isolate a power source to the inductor and the first output and turning a second switch ON to connect the second output to the inductor.

20. The method of claim 19, further comprising generating a first signal to control the first switch that turns the first switch ON during the first stage of operation and OFF during the second, third, and fourth stages of operation, generating a second signal to control the second switch that turns the second switch ON during the fourth stage of operation and OFF during the first, second, and third stages of operation, and generating a third signal to control the third switch that turns the third switch ON during second stage of operation and OFF during the first, third, and fourth stages of operation.

21. The method of claim 14, wherein supplying power to the first output travels through only one switch and supplying power to the second output travels only through one switch.

22. A method of operating a single inductor dual output buck converter comprising:

providing power to a first output from a power source; and

providing power to a second output from the first output.

23. The method of claim 22, further comprising providing the power to the first output from a power source through an inductor in a first direction.

24. The method of claim 23, further comprising providing the power to the second output from the first output through the inductor in a second direction that is opposite the first direction.